CLAIMS

What is claimed is:

1. A multi-service access device including a core processing engine having a central processing unit (CPU) and a memory connected to a computer network, the access device comprising:

an analyzer to analyze a current mixture of a plurality of different data traffic types and to create analyzer data; and

an optimizer coupled to the analyzer, the optimizer to optimize system parameters of the access device based upon the analyzer data such that the access device is dynamically optimized in response to changing mixtures of different data traffic types.

2. The access device of claim 1 wherein the analyzer includes a plurality of data taps, each data tap associated with a particular data traffic type to acquire information about the particular data traffic type.

3. The access device of claim 2 wherein the analyzer includes an analyzer processing unit to process information about the plurality of different data traffic types based upon the acquired information from the plurality of data taps to generate the analyzer data.

4. The access device of claim 1 wherein the optimizer includes an optimizing processing unit to process the analyzer data received from the analyzer and to generate optimized system parameters for the core processing engine of the access device such that the access device is dynamically optimized in response to changing mixtures of different data traffic types.

5. The access device of claim 4 wherein the optimizer further includes an optimizing database coupled to the optimizing processing unit that includes optimized system parameters for different mixtures of data traffic types to achieve a desired goal.

6. The access device of claim 5 wherein the optimized system parameters include at least one of scheduling priority, queue size, CPU allocation, memory allocation, discard priority, or message size.

7. The access device of claim 6 wherein if the desired goal is to favor voice

traffic the optimized system parameters are set such that the scheduling priority for voice traffic is set to a high value, queue size for voice traffic is set to a small value, CPU allocation for voice traffic is set to a large value, and the discard priority for other types of data traffic is set to a high value.

8. The access device of claim 6 wherein if the desired goal is to favor a type of data traffic, the optimized system parameters are set such that the scheduling priority for the type of data traffic is set to a high value, queue size for the type of data traffic voice traffic is set to a high value, CPU allocation for the type of data traffic is set to a large value, memory allocation for the type of data traffic is set to a large value, and the discard priority for other types of data traffic is set to a high value.

9. The access device of claim 1 wherein the data traffic types include at least one of voice, video, fax, TCP/IP network protocol, Asynchronous Transfer Mode (ATM) protocol, Frame Relay (FR) protocol, or Voice over IP (VoIP) protocol.

10. The access device of claim 1 wherein the access device is connected between a plurality of individual data traffic inputs and a data link input from a computer network, the access device further comprising:

a first analyzer to analyze a current mixture of a plurality of different data traffic types from the plurality of individual traffic inputs and to create first analyzer data; and

a second analyzer to analyze a current mixture of a plurality of different data traffic types from the data link input from the computer network and to create second analyzer data; and

wherein the optimizer is coupled to both the first and second analyzer, the optimizer to optimize system parameters of the access device based upon the first and second analyzer data such that the access device is dynamically optimized in response to changing mixtures of different data traffic types.

11. A method to dynamically optimize a multi-service access device comprising:

analyzing a current mixture of a plurality of different data traffic types;

generating analyzed data; and

optimizing system parameters of the access device based upon the analyzed data such that the access device is dynamically optimized in response to changing mixtures of different data traffic types.

12. The method of claim 11 wherein analyzing the current mixture of the different data traffic types includes acquiring information about each particular data traffic type.

13. The method of claim 12 wherein generating the analyzed data includes processing the acquired information about each particular data traffic type.

14. The method of claim 11 wherein optimizing system parameters of the access device includes processing the analyzed data to generate optimized system parameters for a core processing engine of the access device such that the core processing engine is dynamically optimized in response to changing mixtures of different data traffic types.

15. The method of claim 14 further comprising utilizing an optimizing database to retrieve optimized system parameters for different mixtures of data traffic types to achieve a desired goal.

16. The method of claim 15 wherein the optimized system parameters include at least one of scheduling priority, queue size, CPU allocation, memory allocation, discard priority, or message size.

17. The method of claim 16 wherein if the desired goal is to favor voice traffic the optimized system parameters are set such that the scheduling priority for voice traffic is set to a high value, queue size for voice traffic is set to a small value, CPU allocation for voice traffic is set to a large value, and the discard priority for other types of data traffic is set to a high value.

18. The method of claim 16 wherein if the desired goal is to favor a type of data traffic, the optimized system parameters are set such that the scheduling priority for the type of data traffic is set to a high value, queue size for the type of data traffic voice traffic is set to high value, CPU allocation for the type of data traffic is set to a large value, memory allocation for the type of data traffic is set to a large value, and the discard priority for other types of data traffic is set to a high value.

19. The method of claim 11 wherein the data traffic types include at least one of voice, video, fax, TCP/IP network protocol, Asynchronous Transfer Mode (ATM) protocol,

Frame Relay (FR) protocol, or Voice over IP (VoIP) protocol.

20. A machine-readable medium having stored thereon instructions, which when executed by a processor, causes the processor to perform operations to dynamically optimize a multi-service access device comprising:

analyzing a current mixture of a plurality of different data traffic types;

generating analyzed data; and

optimizing system parameters of the access device based upon the analyzed data such that the access device is dynamically optimized in response to changing mixtures of different data traffic types.

21. The machine-readable medium of claim 20 wherein analyzing the current mixture of the different data traffic types includes acquiring information about each particular data traffic type.

22. The machine-readable medium of claim 21 wherein generating the analyzed data includes processing the acquired information about each particular data traffic type.

23. The machine-readable medium of claim 20 wherein optimizing system parameters of the access device includes processing the analyzed data to generate optimized system parameters for a core processing engine of the access device such that the core processing engine is dynamically optimized in response to changing mixtures of different data traffic types.

24. The machine-readable medium of claim 23 further comprising utilizing an optimizing database to retrieve optimized system parameters for different mixtures of data traffic types to achieve a desired goal.

25. The machine-readable medium of claim 24 wherein the optimized system parameters include at least one of scheduling priority, queue size, CPU allocation, memory allocation, discard priority, or message size.

26. The machine-readable medium of claim 25 wherein if the desired goal is to favor voice traffic the optimized system parameters are set such that the scheduling priority for voice traffic is set to a high value, queue size for voice traffic is set to a small value, CPU

allocation for voice traffic is set to a large value, and the discard priority for other types of data traffic is set to a high value.

27. The machine-readable medium of claim 25 wherein if the desired goal is to favor a type of data traffic, the optimized system parameters are set such that the scheduling priority for the type of data traffic is set to a high value, queue size for the type of data traffic voice traffic is set to a high value, CPU allocation for the type of data traffic is set to a large value, memory allocation for the type of data traffic is set to a large value, and the discard priority for other types of data traffic is set to a high value.

28. The machine-readable medium of claim 20 wherein the data traffic types include at least one of voice, video, fax, TCP/IP network protocol, Asynchronous Transfer Mode (ATM) protocol, Frame Relay (FR) protocol, or Voice over IP (VoIP) protocol.